IVNT-03

The Vehicle Network Tester to Connect Test Low-Level Physical Layer CAN and CAN FD

Intrepid Control Systems' Vehicle Network Tester (IVNT-03) allows users to connect test low-level physical layer capabilities of on-board controllers connecting to Classical CAN (Controller Area Network) as well as CAN FD (Flexible Data).

The IVNT supports low-level, physical layer validation on up to two dual wire CAN or CAN FD networks as well as supporting connection for data monitoring/transmitting on six additional dual wire CAN or CAN FD buses. Two of the supporting connections are Selectable CAN and can be configured to be single wire (SW) CAN bus, LSFT CAN bus, or Dual-Wire CAN or CAN FD. There are also up to four local interconnect networks (LIN). In conjunction with the included Vehicle Spy 3 software, the IVNT will test high-level application/diagnostic layer services and functions. The IVNT will run each test and give a Pass/Fail status.

The IVNT setup has been designed for ease and simplicity. Connect the controller to CAN High and CAN Low, power the unit, and start the test in the PC application software. After taking these few steps, you will receive a report on the entire system test. Individual tests can be selected and run as well.

Applications

- High-speed isolated USB connection protects PC from potential damage
- Device control by external software using three open APIs: neoVI DLL, SAE J2534, and TMC RP1210 A/B

Features

- 2 dedicated DW CAN channels (ISO 11898-2)
- All Dual Wire CAN channels have CAN FD support
- Support for NON-ISO CAN FD and ISO CAN FD
- Software-programmable CAN termination resistance (Hardware as well)
- Real-time clock for 64-bit message time stamping

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IVNT-03 Network Specification

8 x CAN / CAN FD Channels

- 8 x ISO CAN FD Channels implemented using the industry standard Bosch MCAN CAN FD Core

- CAN 2.0B compatible for all Classical CAN Networks

- Software selectable between ISO CAN FD and NON ISO CAN FD (BOSCH CAN FD)

- 6 Dedicated ISO11898 Dual Wire CAN FD Physical Layer (MCP2561FD)

- 2 Selectable CAN Channels with CAN mode and 3 software-selectable PHY options

- DW CAN mode: 2 dedicated ISO 11898 Dual Wire CAN FD physical layers (MCP2561FD)

- LSFT CAN mode: 2 Low Speed Fault Tolerant CAN physical layers (TJA1055)

- SW CAN mode: 2 Single Wire CAN physical layers GMW3089 / SAE J2411(MC33897)

- Single Wire High Speed Mode, Test Tool Resistor, and High Voltage Wakeup support

- Up to 1 Mb/s software-selectable baud rate for arbitration phase (auto baud capable)

- Up to 8 Mb/s software-selectable baud rate for data phase (auto baud capable)

- Listen-only mode support

- Four software programmable DW CAN termination circuits

4 x LIN (Local Interconnect Network)

- 4 x LIN (Local Interconnect)

- Full support for LIN 1.X, 2.X and J2602

- LIN J2602 / 2.X compatible physical layer

- Software enabled 1K LIN Master Resistor per channel

- LIN Bus Monitor Mode identifies errors: Sync Break Error State and Length, Sync Wave Error, Message ID parity, TFrameMax/Slave Not Responding, Checksum Error and Transmit Bit Errors

- LIN Bus Master Mode operates at same time as LIN Bus Monitor

- LIN Bus Slave simulation – with or without an LDF file

- LIN Bus hardware schedule table with support for LIN diagnostics

- Software-selectable baud rate

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- Measure VBATT
- Short HSCAN (H)igh to (L)ow – Measure Voltage of Low
- Short HSCAN H to L – Measure Voltage of High
- -1V offset to HSCAN, 1600pf cap added – Measure Voltage of Low
- -1V offset to HSCAN, 1600pf cap added – Measure Voltage of High
- +1V offset to HSCAN, 1600pf cap added – Measure Voltage of Low
- +1V offset to HSCAN, 1600pf cap added – Measure Voltage of High
- Short HSCAN L to VBATT – Measure Voltage of Low
- Short HSCAN H to VBATT – Measure Voltage of High
- Short HSCAN L to GND – Measure Voltage of Low
- Short HSCAN H to GND – Measure Voltage of High
- Measure HSCAN L relative to V- (Vehicle Ground)
- Measure HSCAN H relative to V-
- Measure HSCAN Resistance
- Set HSCAN Resistance 0Ω, 60Ω, or 120Ω
- Short MSCAN H to L – Measure Voltage of Low
- Short MSCAN H to L – Measure Voltage of High
- -1V offset to MSCAN, 1600pf cap added – Measure Voltage of Low
- -1V offset to MSCAN, 1600pf cap added – Measure Voltage of High
- Measure Voltage of Low
- +1V offset to MSCAN, 1600pf cap added – Measure Voltage of High
- Short MSCAN L to VBATT – Measure Voltage of Low
- Short MSCAN H to VBATT – Measure Voltage of High
- Short MSCAN L to GND – Measure Voltage of Low
- Short MSCAN H to GND – Measure Voltage of High
- Measure MSCAN L relative to V- (Vehicle Ground)
- Measure MSCAN H relative to V-
- Measure MSCAN Resistance
- Set MSCAN Resistance 0Ω, 60Ω, or 120Ω

High-Level Tests (using Vehicle Spy 3 Software):

- Diagnostic Service Command Request
- Diagnostic Service Command Response
- Diagnostic Service Response Data Validation
- Normal Mode Message Timing Accuracy
- Vehicle Network Simulation
- Signal Data Monitoring
- Signal Data Latency Test

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HD DB26 Pins

Pin	Description	Pin	Description
1	ETH TX+	14	HS CAN 1 H
2	HS CAN 4 L	15	MS CAN H
3	HS CAN 5 L	16	HS CAN 2 H
4	HS CAN 1 L	17	HS CAN 3 H
5	MS CAN L	18	HS CAN 6 H LSFT CAN H SW CAN 2
6	HS CAN 2 L	19	VBATT
7	HS CAN 3 L	20	ETH RX-
8	HS CAN 6 L LSFT CAN L	21	HS CAN 7 L LSFT CAN 2 H
9	ETH TX-	22	ISO K/LIN 1
10	GND	23	LIN 2
11	ETH RX+	24	LIN 3
12	HS CAN 4 H	25	ETH ACTIVATE
13	HS CAN 5 H	26	HS CAN 7 H LSFT CAN 2 H SW CAN

uDB9 Pins

Pin	Description
1	LIN 1
2	LIN 2
3	LIN 3
4	LIN 4
5	GND
6	MISC DIO 5
7	MISC DIO 6
8	EMISC 1
9	EMISC 2

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